A Snapshot of Sarcoma

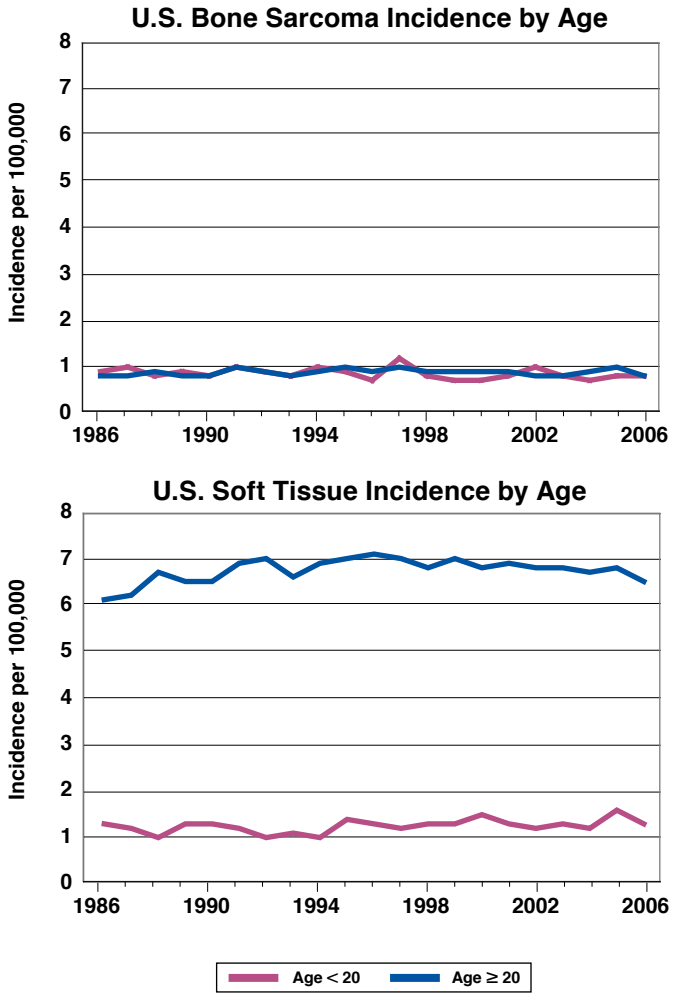
Incidence Rate Trends

Sarcomas are a diverse group of malignant tumors that develop from fat, muscles, nerves, joints, blood vessels, bones, and deep skin tissues. Sarcomas are difficult to differentiate from other malignancies when they are found within organs; thus, they are frequently misdiagnosed and highly underreported. As a result, although the incidence estimates presented here include the best available data, they are probably low. Because sarcomas often afflict people in the prime of life, the number of years of life lost is substantial despite the relatively low incidence. It is estimated that in 2009, approximately 10,660 and 2,570 Americans will be diagnosed with soft tissue and bone sarcoma, respectively, and that approximately 3,680 and 1,470 will die from the diseases.

Soft tissue sarcoma[1] and osteosarcoma (bone sarcoma) incidence rates have remained relatively constant over the past 30 years; however, soft tissue sarcoma is more deadly due to the lack of detectable symptoms at early disease stages. Several subtypes of osteosarcoma and soft tissue sarcoma exist; the exact number of Americans with each sarcoma subtype is unknown.

Source for incidence and mortality data: Surveillance, Epidemiology, and End Results (SEER) Program and the National Center for Health Statistics. Additional statistics and charts are available at http://seer.cancer.gov/.

[1]Does not include Kaposi sarcoma, which is addressed in a separate Snapshot.



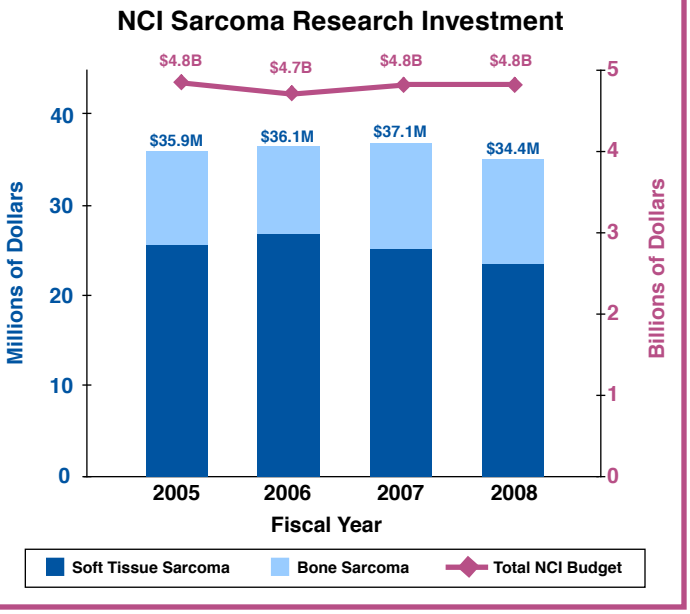
Trends in NCI Funding for Sarcoma Research

Funding data for sarcoma has only been collected since 2005. The National Cancer Institute's (NCI) investment[2] in sarcoma research[3] decreased from $35.9 million in fiscal year 2005 to $34.4 million in fiscal year 2008.

Source: NCI Office of Budget and Finance (http://obf.cancer.gov).

[2]The estimated NCI investment is based on funding associated with a broad range of peer-reviewed scientific activities. For additional information on research planning and budgeting at the National Institutes of Health (NIH), see http://www.nih.gov/about/.

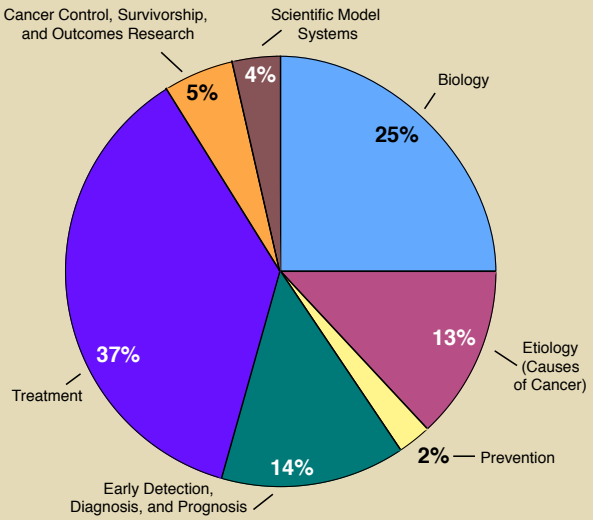
[3]Does not include Kaposi sarcoma, which is addressed in a separate Snapshot.



Examples of NCI Activities Relevant to Sarcoma

- The **Sarcoma Progress Review Group (PRG)** and the **Adolescent and Young Adult Oncology (AYAO) PRG**, two panels of prominent scientists and patient advocates, assessed the state of the science and identified future research priorities for sarcoma and other understudied cancers in adolescents and young adults. http://planning.cancer.gov/library/2004sarcoma.pdf and http://planning.cancer.gov/library/AYAO_PRG_Report_2006_FINAL.pdf
- NCI's **Strategic Partnering to Evaluate Cancer Signatures (SPECS)** program explores how information from molecular studies can be used to improve the care and outcomes of cancer patients. One SPECS project is refining and validating molecular signatures to provide a more accurate diagnosis of childhood sarcomas and predict their clinical behavior. http://cancerdiagnosis.nci.nih.gov/specs/index.htm
- The **Prevention Agents Program** provides scientific and administrative oversight for chemoprevention agent development from preclinical research to early Phase I studies. The program is currently supporting research on several agents for potential chemopreventive efficacy in sarcoma. http://prevention.cancer.gov/programs-resources/groups/cad/programs/agents
- NCI's **Drug Development Group (DDG)** supports the oversight and preclinical/clinical development of therapeutics, including potential agents for the treatment of sarcoma. http://dtp.nci.nih.gov/docs/ddg/ddg_current.html
- The **International Ewing Sarcoma Study** is a clinical trial of a promising new agent against this disease. http://www.cancer.gov/ncicancerbulletin/NCI_Cancer_Bulletin_031808/page3

NCI Sarcoma Research Portfolio



Percentage of Total Dollars by Scientific Area
Fiscal Year 2008

Data sources: NCI's Division of Extramural Activities and the NCI Funded Research Portfolio. Only projects with assigned scientific area codes are included. A description of relevant research projects can be found on the NCI Funded Research Portfolio website at http://fundedresearch.cancer.gov

- The **Soft Tissue Sarcoma Factsheet** contains information about the possible causes of soft tissue sarcoma, its frequency, symptoms, diagnosis, and treatments, as well as ongoing clinical trials. Information specialists can also answer questions about cancer at 1-800-4-CANCER. http://www.cancer.gov/cancertopics/factsheet/Sites-Types/soft-tissue-sarcoma
- The **Soft-Tissue Sarcoma Home Page**, **Bone Cancer Home Page**, **Uterine Sarcoma Home Page**, and **Ewing Family of Tumors Home Page** provide up-to-date information on treatment, prevention, genetics, screening, and testing for various types of sarcoma. http://www.cancer.gov/cancerinfo/types/soft-tissue-sarcoma/, http://www.cancer.gov/cancerinfo/types/bone/, http://www.cancer.gov/cancerinfo/types/uterinesarcoma/, and http://www.cancer.gov/cancerinfo/types/ewings/

Selected Advances in Sarcoma Research

- Researchers discovered that **proteins that promote development of Ewing sarcoma activate certain genes** by binding to repetitive DNA elements called microsatellites. http://www.ncbi.nlm.nih.gov/pubmed/18626011
- A protein called **stromal cell-derived factor-1 enhances Ewing sarcoma tumor growth** by stimulating formation of tumor blood vessels. http://www.ncbi.nlm.nih.gov/pubmed/18537159
- Researchers determined that the outcome of patients with Ewing sarcoma after **autologous stem cell transplantation was comparable** to that after conventional chemotherapy, surgery, and irradiation. http://www.ncbi.nlm.nih.gov/pubmed/18246113
- The stomach cancer drug **sunitinib might be effective in treatment of rare sarcomas** that express increased levels of a protein called PDGFR. http://www.ncbi.nlm.nih.gov/pubmed/19366796